cicle appeared in 1900, so that four to eight years have elapsed since the various parts appeared. During this period the author says that local and visiting botanists have been extremely active in exploration, discovering new stations, plants new to Greece, and new species. All these additions have been brought together in this supplement, so that the *Conspectus* may be regarded as fairly complete again.—J. M. C.

Anatomy of dicotyledons.—The translation of the SOLEREDER'S *Systematische Anatomie der Dicotyledonen*[13] into English gave the author opportunity to revise the work and to add much supplementary matter. This has now been brought together at the instance of the German publisher for the benefit of those who have the original. This large *Erganzungsband* will be desirable for all those libraries that have the first two volumes, for it contains an immense amount of material. Besides the additional data, the concluding remarks have necessarily been revised. —C. R. B.

NOTES FOR STUDENTS

Sieve tubes in Laminariales.—Miss SYKES[14] has investigated the anatomy and histology of Macrocystis and Laminaria, chiefly *M. pyrifera* and *L. saccharina*. A few other species, such as *Sacchariza bulbosa*, *Laminaria digitata*, *Alaria esculenta*, and *Nereocystis Luetkeana*, were also examined to supplement the main results. Chief attention was paid to the morphological nature of the trumpet hyphae and of the true sieve tubes, the presence or absence of protoplasmic connecting threads, the development of sieve plates, and the nature of callus.

Some of the conclusions may be summarized as follows: (1) The trumpet hyphae in *M. pyrifera* and *L. saccharina* are to be looked upon as true sieve tubes. They represent the original central cells of the thallus modified, and may be termed primary pith filaments. Though they differ as to their degree of development, they are certainly homologous with the secondary sieve tubes of Macrocystis, which are similarly derived from the modified primary cortex of the young thallus. (2) It is believed that the histology of the sieve plates in the primary pith filaments and secondary sieve tubes is essentially the same. Threads are formed traversing the young sieve plates, and each gives rise in the older plate, apparently by means of ferment action, to a slime string inclosed in a rod of callus. In Macrocystis each original thread first divides to form a group, and each thread of a group forms its own callus rod, but finally, by fusion, only one slime string is produced from each group. The older sieve plates are obliterated by the deposition of a large mass of callus over their surface, and callus is also formed throughout the length of the old sieve tubes. (3) The callus is to be looked upon as a

[13] SOLEREDER, H., Systematische Anatomie der Dicotyledonen. Ein Handbuch für Laboratorien der wissenschaftlichen und angewandten Botanik. Erganzungsband. Imp. 8vo. pp. viii+422. Stuttgart: Ferdinand Enke. 1908.

[14] SYKES, M. G., Anatomy and histology of *Macrocystis pyrifera* and *Laminaria saccharina*. Annals of Botany **22**:291–325. *pls. 19–21*. 1908.